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ABSTRACT

Promising instructional development perspectives are synthesized into a set of perspectives that might be discussed by the instructional technology profession to set some new directions for the field. An integrated set of criteria, "Configurational Inquiry Instructional Development Perspective" (CIIDP), is proposed. Configurational inquiry means a thorough detection, diagnosis, and appraisal of a variety of human or non-human systems in terms of structure, arrangement, and interrelationship to resolve the problems of the inquirer. The CIIDP had the following four features: (1) systemic thinking as its structure; (2) interdisciplinary approach as its path; (3) human-based inquiry as its heart; and (4) improving interfaces as its top task. The synthesis of these elements provides a new orientation to instructional development and offers an appealing focus. It suggests, not only what instructional development should be, but also how the inquiry into the instructional technology field should be undertaken. Two figures illustrate the discussion. (Contains 17 references.) (SLD)

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Title:

Configurational Inquiry Instructional Development Perspective

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Introduction

The field of instructional technology is in transition. During the past few decades, the arrival of the information age has had a profound impact on the field. The most visible change has been the dramatic development and extensive availability of computers and telecommunications technologies. The concepts, applications, and resources developed from these technological advances when applied to the field greatly stimulate our imagination and promote our capability of solving instructional and learning problems.

These technological advances also allow us to think beyond public and higher education. More and more IST graduates and faculty members are taking jobs and consulting in nontraditional educational contexts such as corporate development, government training, health care institutions, and other such areas. In short, the field of instructional technology is dynamically expanding its clientele. While there are more possibilities and opportunities being generated, at the same time there are more responsibilities to consider.

In order to run our business more effectively and wisely in the new era, we need to have a new perspective which can furnish new guidelines. This paper is thus intended to synthesize the promising instructional development perspectives into a current set which might be discussed by the profession at large and might highlight new directions for the field.

In Search of a New Perspective:

Davies (1982) argued that instructional development can be best understood as a set of criteria and he contended that each process of instructional development must contribute to these criteria. The final results should be well integrated into people's lives and be concerned with not only their behavior but also their cognitive processes. That is, instructional development is concerned with worthy human performance and healthy human development.

In this paper, the authors propose an integrated set of criteria entitled "Configurational Inquiry Instructional Development Perspective " (CIIDP). By the term "configuration," the authors mean the structure and arrangement of a certain system and of its functional processes. The word configuration also implies that the vigorous interrelationship and interaction of the elements existing in that system. The term "inquiry" usually denotes a quest or investigation for knowledge or truth. Nelson (1976) interpreted inquiry as a means, whether scientific or philosophical, utilized by investigators to be fruitful; that is, it is used to solve inquirers' problems through a thorough investigation toward the research target. In short, "configurational inquiry" means that a thorough detection, diagnosis, and appraisal of a variety of human or non-human systems in terms of the structure, arrangement and interrelationship so as to resolve the inquirer's problems.

The CIIDP encompasses four features which include (1) systemic thinking as its structure, (2) interdisciplinary approach as its path, (3) human-based inquiry as its heart, and (4) improving interfaces as its top task.

First of all, instructional development is not a concept like mechanics -- it is more like liberty (Davies, 1982.) The exploration of a

complex concept such as liberty thus requires the use of a more sophisticated method such as the holistic nature of the systemic approach. Therefore, one of the determinants for an instructional developer to succeed, the authors assert, is to undertake a systemic inquiry of the configuration of various ID processes.

Second, instructional development could be regarded as an activity to facilitate human development through the improvement of instructional and learning process. However, human development is so complex that adequate understanding cannot result only from one specialization. In other words, the need of an interdisciplinary approach for instructional development is needed in the areas of theory and practice. One of the purposes of this paper is to remind and encourage practitioners of instructional technology to rethink the roots of our field and to enrich these roots through the inquiry of the configuration of polydisciplines.

Third, instructional developers are social activists in scientists' clothing who mainly perform their jobs among people (Schwen et al., 1984). The jobs are basically a task of human-based inquiry which involves a great deal of interaction, communication, and negotiation within and among the various human communities. The authors argue that instructional development should be neither instructor- nor learner centered, but rather human centered. By human-centered, the authors mean that all significant members of the ID process are taken into account. An appropriate exploration of the configuration of a given human society thus becomes another significant element in the ID process.

Finally, in order to optimize the development of instruction, we need to polish the interfaces among all identities involved in the process. These interfaces are composed of various gaps and obstacles. In order to resolve instructional/learning problems, we need to overcome these barriers, so as to improve these interfaces. In other words, we need an inquiry of the configuration of diverse interfaces toward the optimal organization of instructional systems.

Systemic Thinking as Its Structure

Davies (1991) compared two product planning strategies, parallel development vs. serial development (see figure 1), and explored why instructional developers need to adopt the parallel development method. He illustrated that adopting a parallel development approach enables us to reduce the cycle time, remove the number of interfaces between the ID functions, and conceptualize the ID process as an art rather than an engineering activity. In essence, the parallel development method is a systemic approach, and the serial one is systematic.

Insert Figure 1 Here

In addition, the authors contend that the followings can complement Davies's notion and make it more complete. Since a systemic approach is based on social logic and adopts the limited rational philosophy, it thus is closer to the social reality. On the other hand, a systematic approach is based upon scientific logic and adopts an absolutely rational concept, so it is suitable for highly controlled experimental situations. While a systemic

approach optimizes feedback and accelerates revision, a systematic sacrifices feedback and slows down revision. A systemic approach places greater emphasis on the dynamics of participation; however, a systematic approach lacks a cooperative climate among the participants. A systemic approach gives us more choices which makes the process more personalized; in contrast, a systematic approach formulates a set of rigid procedures which inhibits our creativity and imagination.

The discussion of systematic and systemic methods among instructional technology professionals is not new. While most of them focus upon the differences and application between these two perspectives, there is little in the literature that examines their relationship. In order to synthesize and make a connection among these contributions, the authors argue that the systematic approach, in fact, can be regarded as a subset of the systemic approach. By adopting this concept, we can formulate a particular strategy according to a specific time at a specific place. We hold highly tuned analytical knowledge and skills which make our performance artful. We thus can make a wiser and more realistic decision in light of the situation encountered.

For instance, when the circumstance is less freedom or the scenario is a pedagogic one, especially when there are low-level skills to be taught, we can accordingly construct a highly structured procedure to develop instruction because such a systematic approach gives people basic skills and it is easy to follow. Devising a military training program is a case. On the other hand, we can also conduct an ID process like rapid prototyping (Tripp et al., 1990) to meet a certain client's request. Such an alternative strategy is especially suited to a decentralized client system in which instructional developers and clients work together in a participative, interactive mode. To work with a systemic approach, we rearrange, or sometimes remove, and prioritize instructional development phases accordingly to optimize our efforts; that is, we work in a flexible manner.

Instructional development is a dynamic activity which involves a myriad of decisions and judgments. Adopting a systemic approach enables us to quickly penetrate the problems and make accurate judgments and wise decisions. This adoption is especially meaningful in the information age which is both content and context rich. In addition, a systemic approach facilitates implementation, liberates the structure, pays attention to the relationship and interaction of all involving participants, and focuses upon the matters of elegance, effectiveness and efficiency. All of these meet the contemporary demands of an instructional development activity in terms of both theory and practice.

Bhola's (1991) notion regarding this issue is particularly relevant: "the systematic is merely a scaffolding for developing a socio-logic; a systemic of purposive action that, in the real world of practice, can accommodate, the emotion, the intuitive, the reflective, the social and the structural." The advocacy of a systemic inquiry of the configuration of instructional development process now seems both appropriate and timely.

Interdisciplinary Approach as Its Path

The nature of instructional technology is eclectic. People in the field come from diverse disciplines and have varied expertise to offer. Although the concept of the interdisciplinary approach is not new to our field, it has been largely overlooked. When performing an instructional

development task, we usually stick to our own paradigms and use our own expertise in problem solving with little objective observation and unprejudiced analysis. We have failed to think globally and to make connections among our multifarious and profound competencies.

In the field of instructional technology, specialization is still needed at certain levels, but innovative solutions cannot be created by merely one specialization. That is, by looking at multiple perspectives, we can secure the benefits which are generated from shared and wise solutions. The cooperative interaction between diverse disciplines can complement and extend the development of new knowledge and its application to the field. The interdisciplinary approach can help us investigate known systems in a creative search for new systems which will invent new problems; that is, this approach allows us to go beyond problem solving to a level of problem finding.

Working in an interdisciplinary approach is to perform our jobs within a semiotic framework which can be illustrated as: thesis --> anything else that seems appropriate (including anti-thesis) --> synthesis. For example, what can instructional developers learn from a professional landscape photographer? What competencies of a basketball player are worthwhile for us to master? What characteristics of a marketing manager can be of benefit to us? A professional landscape photographer's love of his/her subject and the ability to simplify the complexity and to anticipate the optimal arrangement; a basketball player's superb skills, flexibility, energy, and a keen reflex; and a marketing manager's ability to recognize the maximum entry point to the identified target, and a sensibility to the sophisticated reality and a holistic view--all of these, can be of benefit to us when performing our jobs. By doing this, we can maximize our strengths, experiences, and resources. The combined efforts may also contribute added dimensions to our research and applications. The convergence of independent ideas is viewed as being more substantial than ideas would have been singularly.

In addition to providing the combined efforts, an interdisciplinary approach as the path of instructional development has another implication. It encourages us to think outside of "the box"; that is, it urges us to be sensitive to the surrounding environment and to think globally. Schwen (1988) indicated that the most significant determinants of our professional futures are outside of our control in many ways. Outside our control does not mean that we should disregard these factors, instead it implies that we must be quite sensitive to these social, physical, and intellectual contexts and forces. Being sensitive to the environmental reality means that we should view reality as the complete interdependence and nonseparability of variables. In other words, we should treat these uncertainties as a characteristic of problems and resolutions. Being sensitive to the environmental reality also means that we should become more open to alternatives and integrate contradictions into an all-inclusive whole which is a basis of reality. A wise application of the environmental influences would empower us in terms of elegance, effectiveness, and efficiency.

Studies on humans and their societies necessarily transcend discipline boundaries. Batts (1985) indicated that whenever knowledge is to be used interpretively or applicatively, curriculum content will tend to be determined by real-life situations, and the network of ideas, concepts, patterns, or relationships pursued will be largely determined pragmatically. While the practice of an interdisciplinary study facilitates

knowledge transfer, an application of interdisciplinary approach enables instructional developers to proact and react in the reality. A thorough inquiry through an interdisciplinary approach helps us anticipate potential obstacles (for elegance), reduce the cycle time (for efficiency), and identify more opportunities (for effectiveness).

Human-Based Inquiry as Its Heart

In order to optimize the instructional development process, a human-based inquiry is needed in terms of theory, practice, and our role. Education is not about something casual, but about the proper way to live. Schools are not places for preparing children for life, Davies (1976) argued, they are life themselves for children, teachers, and parents. He went on to claim that we need a people-oriented school, rather than a child-centered or teacher-centered one. Davies (1982) further argued for a shift of instructional development movement. He claimed that the new generation of instructional development is both organic and human in its orientation. It is concerned more with values, situations, choices, and roles which mainly result from human inner thoughts and outward responses. It respects diverse individual's experience, background, and culture. It also implies a need of human-based inquiry to create a human-centered learning environment.

When examining our role, Schwen et al. (1984) indicated that instructional developers are social activists in scientists' clothing. The implication of this is twofold. First, clothing reflects the image which we reveal. Clothing also signifies the methods, tools and strategies which we carry and employ. We dress up and apply the scientific methodologies and tools to address the human learning and performance problems. Second, it indicates the essence of our role; that is, we are social activists who mainly perform our job among people. The job is basically a task of human-based inquiry which involves a great deal of communication, interaction, and negotiation within various human communities.

Banathy (1991) supported this standing point by claiming that we have seen the emergence of four generations of design approaches to human activity systems. While the first generation of design is a "design by" approach, the second "design for", and the third "design with", the fourth generation is an approach of "designing within." Banathy contended that to be authentic and sustainable, human activity systems must be designed and accomplished by the creative participation of all people in the system; that is, it should reflect their collective vision of humanity. Such participation, Banathy went on to argue, enables people to better understand their system and their role in it. It also generates consensus among those who participate, and further ensures that people will take part more effectively and with a deeper level of commitment in the implementation of the design. He encourages every community member by stating that designing our future is our responsibility and we should take charge of shaping it. This responsibility should thus fall on each of us: instructional developers, learners, instructors, and other community members. This understanding enables self-determination and respects the autonomy of the community. It also bestows on the community a unique self-guided and self-directed life. In short, the "design within" approach gives the community ownership.

In order to bestow ownership, we should conduct instructional development activity within the client system and involve all people who are in it, who use it, and who are served by it. Therefore, we need to have a human-oriented instructional development model which is grounded by a thorough human-based configuration inquiry; that is, it should be central to the innate potentialities of human beings. Theoretically, the heart of this model should be grouped with a set of people including the learners, the instructors, the content experts, the instructional developers, and other contemporary life such as the school administrators, corporate personnel in the community, and learner's family, friends, etc.

A human-based inquiry can enrich ID process in many ways. For instance, the curriculum revision project conducted by Indiana University, Instructional Systems Technology Department (1989-1992), provides a good example in applying contemporary life to identify reality. During the initial needs assessment, a pool of IU IST graduates and contemporary practitioners in the field actively assisted in identifying the "real" needs such as more emphasis upon communications skills, better preparation in understanding the "bottom line" of the business environment, and more exposure to and "hands-on" experience with the emerging technologies. The IU IST Multi-Media labs sponsored by the Apple and AT&T Corporations also demonstrates how contemporary life can play a worthy role on information provider and resource linker.

In addition, the establishment of the NASDC (The New American Schools Development Corporation) illustrates the benefit of alliance of business and education (Reigeluth, 1991). The NASDC was formed by business leaders with the hope of reinventing American education by designing new schools for a new century. It is an independent, non-profit organization that is expected to raise roughly $200 million from the private sector to underwrite the design of a new high-performance educational environment.

Moreover, the effort and achievement of "Education 2000" in the United Kingdom give us another persuasive instance to incorporate a human-based inquiry into the practice of instructional development. Education 2000 was formed in 1982 by a group of individuals from education, industry, and commerce. Its aim is to reshape education to meet the present and future needs of individuals within the society. At present, there are nine Education 2000 learning communities established in the UK. These communities all have around 65,000 residents and the project involves all of the schools and all community members. Strong community involvement (as the stimulus for change), curriculum revision (as the means for the change), and technology innovations (used to support the change) are its basic approach.

As indicated above, the process of instructional development is the collective challenge of people in the community. If we want our contribution to be significant, productive, and useful to our society, intelligent strategies should be devised. The strategies suited to this perspective include dynamic participation, flexible grouping, team collaboration, experience connecting, resource linking, discipline integration, creativity development, and responsibility taking.

Improving Interfaces as Its Top Task

While the term "interface" generally means the space where humans and machine meet, the authors interpret it as an area in which diverse systems contact, communicate and interact. In addition to human-machine interfaces, there are also a variety of interfaces existing between different machines or different human groups. For our purpose, this paper will mainly address the latter which varies in names such as perception, experience, belief, value, norm, and culture. .

Our society is undergoing massive changes as we become more effected by the information age. These changes, in such an environment, can be viewed as having a rearrangement of roles, relationships, responsibilities, functions, opportunities, and boundaries within or among various human societies. We modify or reform the old system in order to adopt changes, but, on the other hand, we need to maintain a certain amount of harmony as the changes may result in conflicts. To keep harmony is to make contacted interfaces compatible.

These interfaces are always composed of reasonable amount of, if not many, gaps and barriers. In order to adopt changes to resolve problems and maintain the needed harmony simultaneously, we must identify, prioritize, and overcome these obstacles; that is, we need to improve these interfaces in terms of major functions and major roles. The authors hold that the greatest success in our field will result from improving these interfaces rather than from a dramatic breakthrough in hardware. After all, technology must be accessible to be useful. Improved interfaces can bridge a variety of human or non-human obstacles in order to maximize the access and potentialities of technology. The success of instructional development depends upon a synthesis effort to perfect the interfaces among those factors involved in the entire process. In other words, we need a thorough inquiry of the configuration of diverse interfaces toward the optimal organization of instructional systems.

Arnn and Strickland (1975) remarked that frequently strategies which seem excellent on paper fail to produce the desired results, because they lack the consideration of human obstacles. The possible obstacles, according to Gentry and Trimby (1984), include:

-- Gatekeeper rejection after an ID project is underway
-- Client misinterpretation of ID project goals and activities
-- Incongruities within a client organization
-- Loss of momentum after initiation of a project
-- Conflicting expectations within the client group
-- Raids on resources previously committed to an ID project
-- Unclear Client/Developer lines of responsibility and authority
-- Difficulty in obtaining essential information

A task of interface-improving must be performed throughout the whole activity of instructional development. The authors thus view interface-improving as a continual psychological and physiological process. The strategies associated with this process include obstacle removing, obstacle rearranging, and obstacle transforming or a combination according to the nature of the obstacles.

Obstacle Removing: Whenever encountering obstacles, the first thing that usually comes to mind is to remove it or to handicap its influence. Strategies such as promoting communication, redesigning facilities, supplying adequate materials and tools, outfitting appropriate and timely

information or feedback, making the ID process more interesting and rewarding, or providing proper training or education, can remove, or at least reduce, a certain amount of obstacles.

Obstacle Rearranging: For those obstacles which cannot be easily removed or need to be kept for some reason, we may want to rearrange them in order to decrease their impact. It is worthwhile to remember that an organization may derive a dynamic spirit from the existence of certain obstacles. A delicate rearrangement and management of these obstacles will positively facilitate our performance. Flexible teambuilding according to the tasks, more appropriate personnel selection and assignment giving, or work flow and load redistribution, are tactics identified in this approach.

Obstacle Transforming: Many unsatisfactory performances result not from human factors, although sometimes they do, but rather the organizational structure does not function as we expect . These obstacles which handicap human performance exist in the contexts such as an organization's personnel structure, operant management, information flow, and identified culture which cannot be simply removed or rearranged. They need to be transformed. In order to transform these obstacles, we need to reform the personnel structure, change the management practice, redesign the information flow, or alter organizational culture, norms, and beliefs. Breaking customary thoughts and practices is the key to transform this kind of obstacles.

A five-year transition plan to whole language in grades K-8 proceeding in the Westwood school district, Massachusetts, provides a concrete example for this situation (Gursky, 1991). Being aware that a piecemeal change cannot result in true improvement, Superintendent Robert Monson, seconded by a teacher-led reading committee, restructured the school system which move away from basals and standardized tests toward literature reading and alternative forms of assessment. In addition, the restructuring effort of Skowhegan Area Middle School, Maine, is another instance (Norris and Reigeluth, 1991). Under the plan of schools-within-a-school, innovative instructional activities are being implemented out to meet students' needs such as a more flexible schedule, multi-grade grouping, and so forth. Transforming the traditional schooling obstacles and providing a better interface for students to meet their individual's needs greatly facilitate leaning.

Improving interfaces is an endless job. It also is an exploration into the nature of both human beings and the world we are live in. Many decisions made in the pursuit should be aesthetic, experiential, and phenomenological. This pursuit also reveals the beauty of instructional development as an art. The understanding and application of interface improving as a vehicle to facilitate human development and improve human performance is a process of continual refinement. Not only do we wish to make contributions, but also we want to make them effective and efficient, elegant and graceful.

Synthesis

The Configurational Inquiry Instructional Development Perspective stresses that we need a thorough inquiry into the configurations of polydisciplines, various ID processes, human societies, and diverse interfaces in order to achieve an optimal organization of instructional

systems. The inquiries into manifold configurations further implies that instructional development should be an activity of process emphasizing, goal focusing, dynamic participation, interface improvement, resource linking, discipline integration, responsibility taking, and glory sharing.

Banathy (1987) indicated that an instructional development activity, in its practice, is a process of feedback-feedforward and divergence-convergence. In order to shape development images, we oftentimes go back to previous formulations and re-explore the impact of the emerging resolutions upon the identified problems, but, on the other hand, in an anticipatory mode, we move forward and speculate about the effect of current design and choices which are still ahead of us. In addition, we call for exploring more alternatives in the beginning, and, as the activity proceeds, continuing to search for opportunities to make changes as we gradually converge toward the resolutions. The dynamics of divergence-convergence are revealed while the developers continually go through alternating sequences of generating variety and reducing variety, while seeking the most feasible alternative.

As figure (2) illustrates, an instructional development activity should be quite sensitive to the environmental influence such as the social, physical, and intellectual forces and contexts surrounding the identified systems. These external powers provide diverse realities and uncertainties to facilitate or obstruct the instructional development process. Both learning objectives and human or non-human obstacles are milestones. The instructional development components are the journey. These process components such as management, analysis, design, development, implementation, evaluation, and revision are carried out through iterative cycles as we examine and re-examine the centered human-base and their goals. When we reach each specific objective or overcome a particular obstacle, the milestone becomes part of the journey and we can then move beyond that. These recurring spirals are continually ongoing which bring forth progressively more refined characterizations of the system to be developed. This also is a process of negotiation among involved identities with different viewpoints and values in order to work out a mutual resolution. As Banathy identified, dialectics is the underlying philosophy of this approach, and consensus-building methods provide the technology. Through this participatory process, integrated vision could be established, interfaces could be improved, and, the most important, we would arrive at wiser decisions.

Insert Figure 2 Here

While we accept cultural pluralism as a viable societal arrangement and experience diversification of life-styles, this perspective provides us an organic framework which places a great deal of emphasis upon the full development of human potential and their cooperative interaction. This perspective is both synthesis- and decision-oriented. This is a dynamic model. This is also a model of growth.

Conclusion

Progressing from "The Age of Uncertainty" (1977), what inspiration does Galbraith's philosophical transcendence of "The Age of Pragmatism" (1992) bring to us? Pragmatism implies that we work without a restricted paradigm. It also implies that we are flexible when we work with a given reality. An attitude of respect toward societal pluralism is needed to make decisions in terms of maximum usefulness in order to achieve our goals and satisfy our needs.

There is no single best way to develop instruction, Davies (1984) claimed, appropriateness is the key issue. Working without a restricted paradigm is the first step in identifying appropriateness. Appropriateness is not determined by the developers, instructors, or learners, but rather by the the whole human community. They interpret our messages in the context of their own experiences and knowledge, and construct meaning relative to their own needs, background, and interests (Jonassen, 1991).

Pragmatism also signifies an attitude of "complex in mind, but simple on hand" as we communicate with our clients and learners, especially during the initial stage. On the one hand, we regard the complicated realities and capricious environmental factors as our opportunities and integrate diverse contradictions into an all-inclusive whole. On the other hand, we might want our language and tools to be as simple and compatible as possible since, by doing this way, a mutual trustworthiness between the innovation and adoption systems could be easily established and a sense of accomplishment would also be developed. This attitude further suggests that we should be aware of our benefits and limitations. By knowing our strengths and weaknesses, consequently, we would arrive at more precise decisions.

The elements of the Configurational Inquiry Instructional Development Perspective are not new, but the synthesis of these elements does provide a new orientation and offer an appealing focus. Due to its inner complexity, the authors suggest that a pragmatic attitude should be held while adopting this perspective. In addition, the authors also believe that the significance of this perspective meets the contemporary needs which illuminates not only what the instructional development should be, but also how inquiry into the instructional technology field should be undertaken.

In closing, the authors would assert that while our field is in transition, we all have real opportunities and responsibilities which are essential to our growth and development. The Configurational Inquiry Instructional Development Perspective functions as a catalyst to facilitate this growth and development.

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Serial Development	Parallel Development
Relay race tactics	Scrum & scramble tactics
Move in defined, structured phases	Work in flexible & dynamic system
Functions compartmentalized	Functions overlapping
Poor interface between design & production	Ensures product designed for production
Poor communication between between functions	Excellent communication between functions
Flexibility limited	Flexibility great
Longer product planning cycle	Faster product planning cycle
Design product to last life of costly tooling	Design flexible tooling for each product generation
Limiting speed of response to changing market	Enables speedy response to changing market
Greater risk product will fail in market place	Reduced risk product will fail in market place
Low chance of fast product start-up	Good chance of fast product start-up

Figure 1: Product Planning Strategies

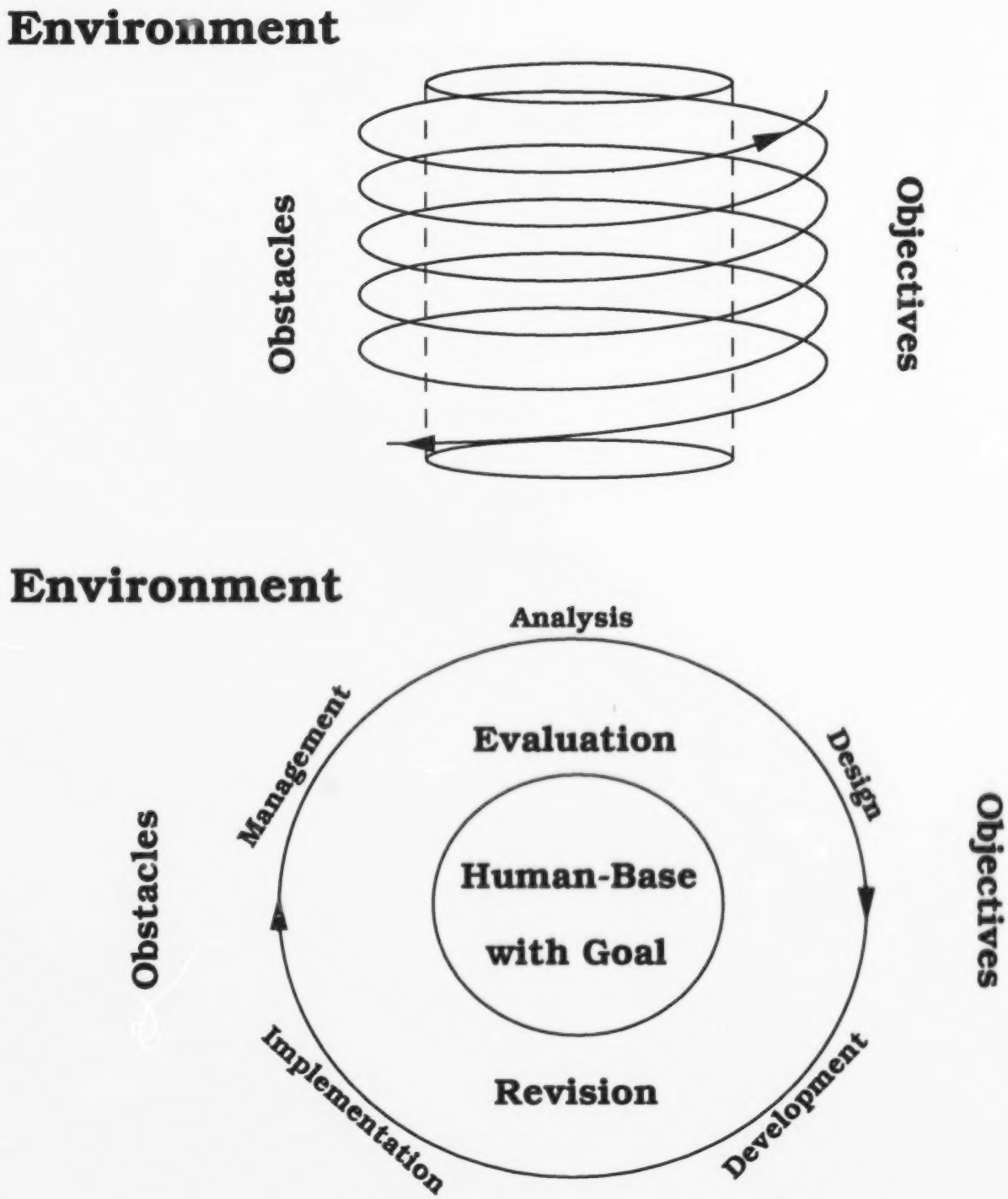

Figure 2: Configurational Enquiry ID Model